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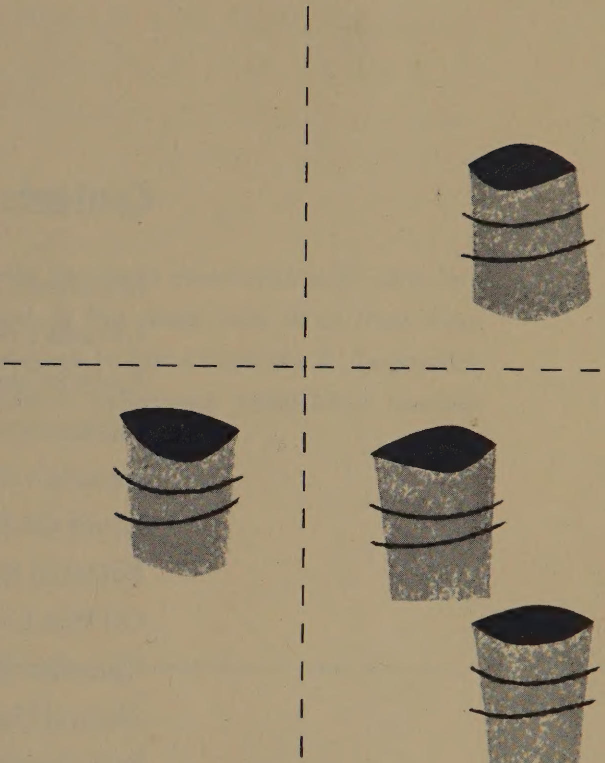

FACTS and FIGURES about OIL in CANADA

imperial oil limited/may, 1961

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FACTS *and* FIGURES *about* OIL *in* CANADA

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The following statistics have been selected for their value in highlighting the development of Canada's petroleum industry. Some of the figures used, particularly those for 1960, are estimates and are subject to revision.

IMPERIAL OIL LIMITED, May, 1961

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Capital for expansion

Canada's modern petroleum industry began only fourteen years ago with the discovery of large supplies of crude oil in the west. In the short time since then over $6 billion have been invested in expansion—enough to have built six St. Lawrence Seaways, or to have financed all of the country's estimated 1960-1961 federal budget with some to spare.

Estimated capital investment in the petroleum industry, 1946-1960 inclusive*

	$Millions
For exploration and development	4,700
For other facilities	2,000
	$6,700

Includes all capital investments in the oil and gas industries except those in natural gas transportation and marketing facilities.

Canada's need for oil

Canada needs the oil discovered since Leduc. High living standards, long distances and mechanized farming make oil of key importance. Canadians, the second largest per capita consumers of petroleum products in the world, used the equivalent of 17.7 barrels of oil each in 1960, compared to 19.7 barrels consumed per person in the United States. Canada as a nation is the third largest consumer of oil in the world—over half the households in Canada are heated by oil, there is more than one motor vehicle for every four Canadians and there is one tractor for every occupied farm in Canada.

Canada uses over three-quarters of a million barrels of oil a day

	1954	*1956*	*1958*	*1959*	*1960**
			(barrels per day)		
British Columbia	60,000	78,000	74,000	81,000	82,000
Prairie Provinces	124,000	154,000	153,000	162,000	162,000
Ontario	189,000	242,000	269,000	287,000	298,000
Quebec	137,000	181,000	199,000	222,000	230,000
Atlantic Provinces	49,000	64,000	70,000	77,000	90,000
Total Canadian requirements	559,000	719,000	765,000	829,000	862,000

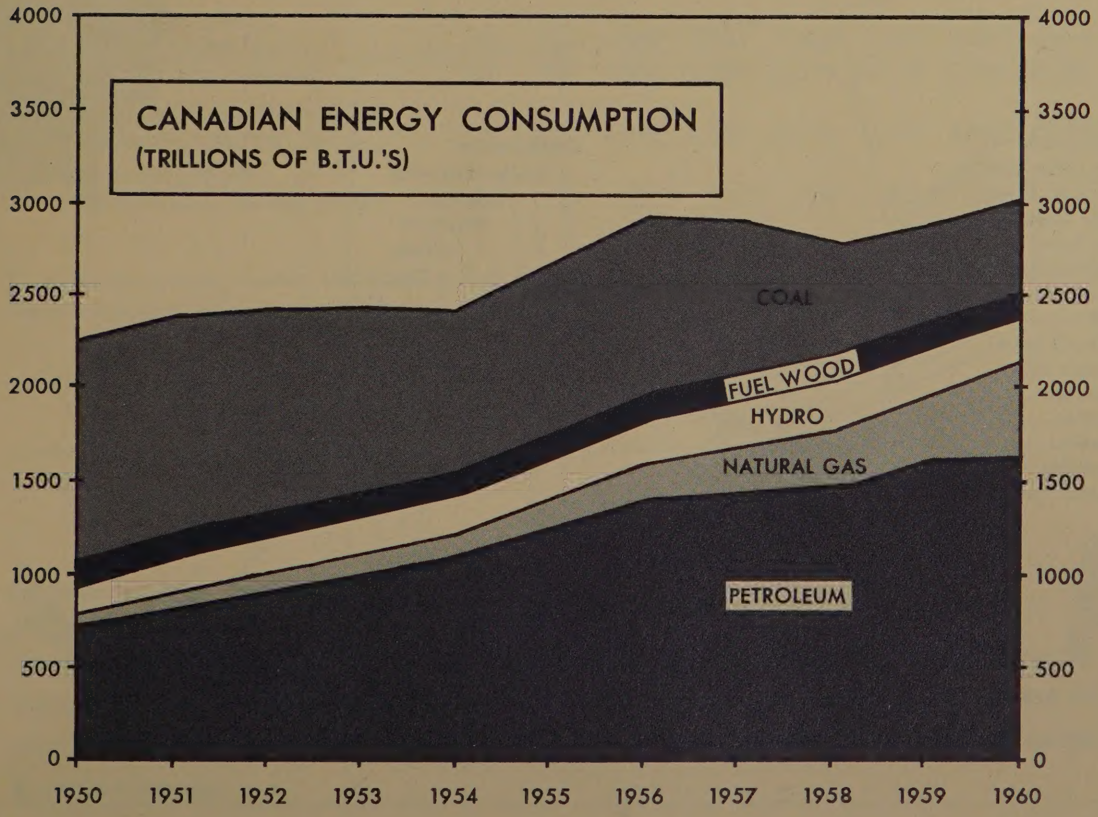
1 barrel = 35 Imperial gallons = 42 U.S. gallons
**Estimated*

Oil consuming units in Canada

Year	*Oil-heated households*	*Vehicle registrations*	*Tractors on farms*
		(all figures in thousands)	
1939	—	1,439	—
1941	67	1,573	175
1946	—	1,622	227
1951	774	2,868	410
1956	1,843	4,255	469
1957	2,040	4,487	481
1958	2,173	4,723	490
1959	2,337	5,012	505
1960	2,519	5,143	510

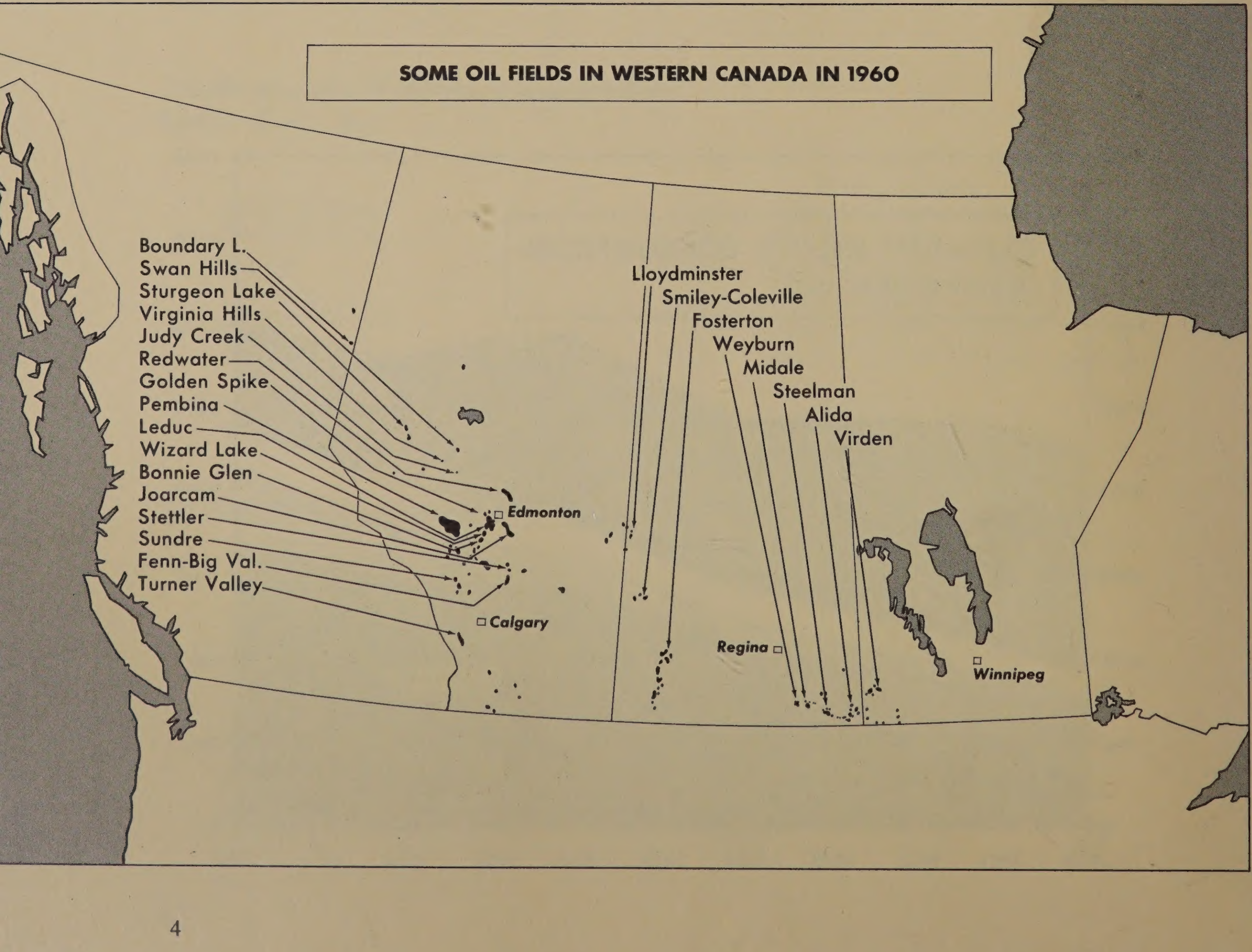
Canadian energy consumption

In the past 10 years Canada's energy requirements have increased by some 34 percent and more than the entire increase has been accounted for by the growth in the use of petroleum and natural gas. Today these two provide about two-thirds of the nation's energy, with oil accounting for a little over half. It is expected that the rate of growth in demand for petroleum, while not as spectacular as in the past few years, will be in the order of about four percent per year.



The growth of western oil

In 1946 there were only eight oil fields in western Canada, production was 19,000 barrels daily and estimated reserves were 72 million barrels. Imperial Oil's Leduc discovery in 1947, 134th well in a $23 million 20-year campaign, gave new direction and activity to prospecting. This led to the discovery of many more important fields over a large part of the western sedimentary area. Today nearly 18,000 wells are capable of producing oil and gas from some 600 fields in western Canada.



Oil progress in western Canada: 1946 to 1960

Oil exploration and production have kept pace with the country's growing needs. Since 1946 exploration and development spending has risen 28 times, crude production is up 28 times. Land being explored is up 13 times and proven crude oil and natural gas liquids reserves have risen 58 times. Production in 1960 was equal to 70 percent of Canada's crude requirements.

	1946	*1948*	*1951*	*1956*	*1957*	*1958*	*1959*	*1960*
LAND BEING EXPLORED								
Millions of acres at year-end . .	20	52	145	195	221	263	269	261
GEOPHYSICAL SURVEYING PARTIES								
Maximum number during year .	11	62	155	149	156	134	110	102
EXPLORATION, DEVELOPMENT & PRODUCING EXPENDITURES								
Millions of dollars per year . .	22	74	243	651	637	603	621	620
PRODUCING OIL WELLS								
Drilled during year	65	273	843	2,370	1,863	1,560	1,405	1,449
Capable of producing	520	907	3,034	10,604	12,179	13,170	14,313	15,365
CRUDE RESERVES AT YEAR-END*								
Millions of barrels	72	512	1,376	3,125	3,255	3,643	4,009	4,209
CRUDE PRODUCTION*								
Thousands of barrels per day .	19	33	132	474	504	461	520	541

**Includes natural gas liquids, i.e., liquid petroleum contained in natural gas when it is in the ground, and which is released and recovered in gas processing plants when the natural gas is produced.*

Eastern Canada

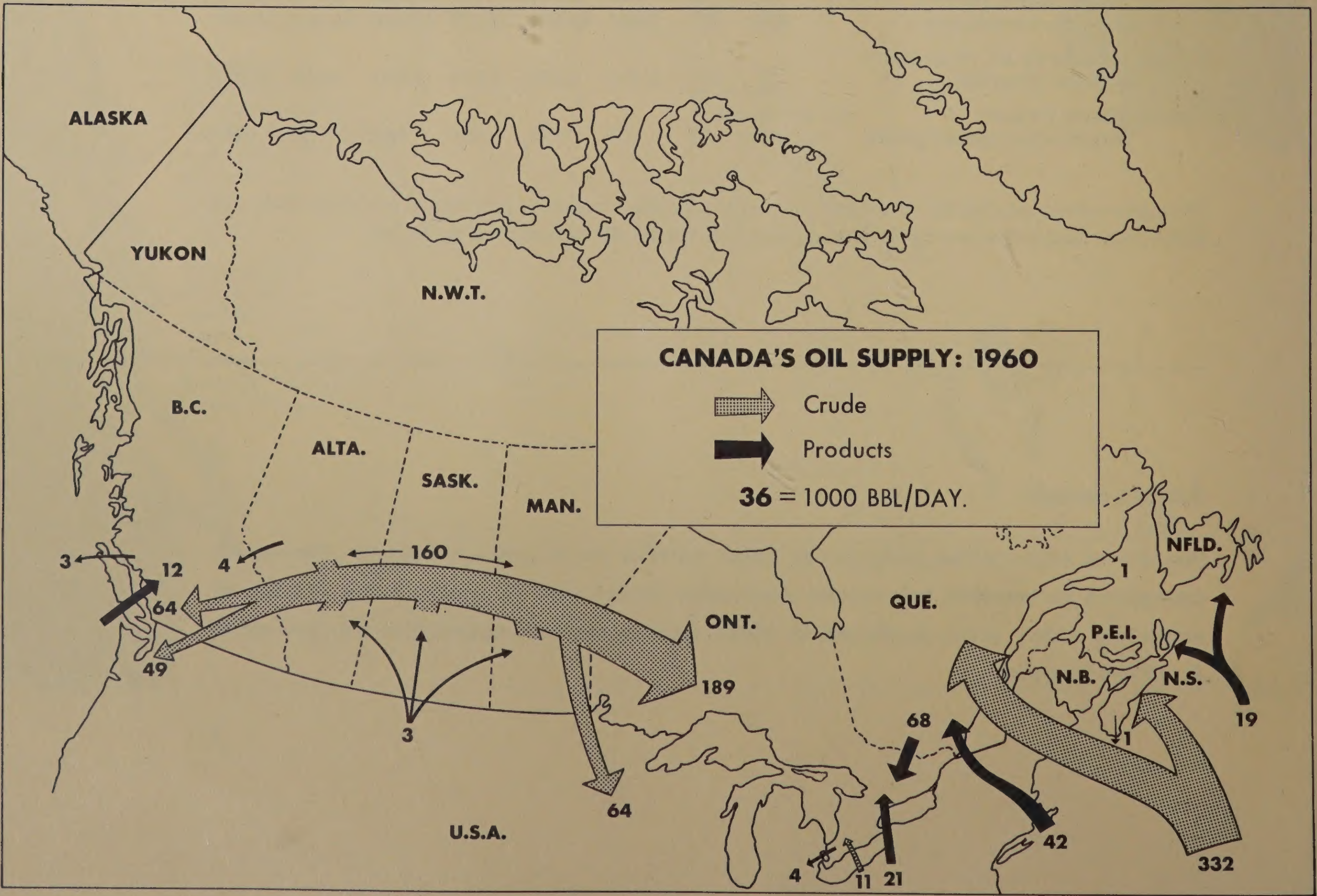
An active exploration program is being carried on in eastern Canada. However, compared to western operations production in the east is small; 2,784 barrels of crude oil a day were produced in 1960, and reserves amounted to an estimated 8 million barrels.

Canada's oil supply: 1960

Since 1947 prairie crude oil has been pushed eastward and westward to new outlets in Canada and the United States. Canadian crude has displaced virtually all imported crude oil from the west coast to eastern Ontario. At the current rate of production Canadian crude is saving an estimated $500 million annually in foreign exchange. Substantial export markets have been developed and it is anticipated that others will arise in areas of the United States within reach of the existing supply lines.

Quebec and the Maritimes are more economically supplied by ocean-borne crude oil and products.

Product imports are chiefly heating oils and heavy fuels brought in to balance refinery runs and to avoid over-production of other products which would be difficult to market, as well as specialty products not manufactured in Canada.



Supplying Canada's oil needs

Canada's needs for oil are met through refining both Canadian and imported crude oils plus the imports of fuels and specialties not provided by refinery operations. In 1960 domestic crude supplied about 55 percent of Canadian refinery needs and, when crude oil exports are taken into account, Canadian crude production was equivalent to 70 percent of the nation's needs for crude oil. Since 1946 the proportion of imported crude oil has dropped from about 90 percent to 45 percent of Canada's crude requirements.

Year	*Crude needs*	*Crude production*	*Production as a percent of needs*	*Crude exports*	*Crude imports*	*Product imports*
	*(thousands of barrels per day)**			*(thousands of barrels per day)*		
1946	196	21	11	—	174	26
1950	302	80	27	—	224	75
1951	353	133	38	1	228	85
1954	471	267	57	7	210	99
1955	537	361	67	46	237	109
1956	639	476	74	116	292	106
1957	663	505	76	151	306	95
1958	667	463	69	82	295	80
1959	746	522	70	92	319	105
1960	775	544	70	113	346	98

**Includes natural gas liquids*

Value of Canada's crude oil trade

Year	*Value domestic crude production*	*Value crude imports*	*Value crude exports*	*Value net crude imports (imports minus exports)*
		(millions of dollars per year)		
1946	15	89	—	89
1950	85	204	—	204
1951	117	233	1	232
1954	244	213	6	207
1955	306	230	36	194
1956	407	271	104	167
1957	454	306	141	165
1958	399	278	73	205
1959	422	277	75	203
1960	451	286	93	193

Crude oil field prices

Distant markets place Canadian crude producers at a disadvantage. Western Canadian crude oil sold in the refining centres of southern Ontario must compete with crude from other sources. The wellhead price, therefore, becomes the competitive price in Ontario less the cost of transportation from the field. Lower wellhead prices give the Canadian producer a lower margin over production costs than that enjoyed by producers elsewhere in North America.

	Gravity	*Wellhead price per barrel**	
Redwater	35°	$2.42	Can. funds
Pembina	38°	2.38	Can. funds
Illinois	36°	3.00	U.S. funds
California-Greeley	37°	3.12	U.S. funds
Mid-Continent	36°	2.97	U.S. funds
Texas —East	39°	3.25	U.S. funds
—West	36°	3.00	U.S. funds
Venezuelan (Guanipa)	30°	2.53**	U.S. funds
Arabian (Persian Gulf)	34°	1.80**	U.S. funds

**March, 1961*
***f.o.b. loading port*

Canada's fossil fuel energy reserves

At the 1960 rate of production Canada's proven reserves of liquid petroleum (4.2 billion barrels) would last about 21 years, and natural gas (30.7 trillion cubic feet) for some 50 years. To meet future growth in demand, exploration must be continued over the nation's vast potential oil and gas-bearing sediments from the U.S. border to the Arctic islands. When these have been thoroughly searched it is expected that reserves many times greater than the present figures will have been discovered. In addition to these the Athabasca tar sands are estimated to contain some 300 billion barrels of oil and Canada's coal reserves are estimated at 47 billion short tons.

Oil pipe line mileage up nineteenfold since 1946

The main flow of Canadian crude from field to refinery is east from Edmonton through the Interprovincial pipe line to Ontario, and west from Edmonton through the Trans Mountain pipe line to the Vancouver and Puget Sound areas. The Interprovincial line delivers crude from Alberta, Saskatchewan and Manitoba fields to prairie, north central United States and Ontario refineries. The refinery at Norman Wells uses Canadian crude from a nearby field.

Pipe line mileage at year-end

Year	*Mileage*
1939	182
1946	418
1950	1,423
1952	2,500
1954	4,808
1956	6,208
1959	7,450
1960	8,010

Mileages shown include both crude and product lines, total lengths of lines which run partly through the U.S., and major gathering lines. Parallel lines (looping) are not included.

Some statistics about crude oil pipe lines

TRUNK LINES	*From-To*	*Length** *(miles)*	*Average throughput (thousands of barrels per day)* *1957*	*1959*	*1960*
Interprovincial/Lakehead	Redwater-Port Credit	1,930	274	337	349
Montreal/Portland	Portland-Montreal	236	223	231	216
Trans Mountain	Edmonton-Vancouver & Puget Sound	785	155	98	113
PRINCIPAL GATHERING SYSTEMS					
Britamoil	Duhamel-Edmonton	380	48	46	44
Imperial	Leduc & Redwater-Edmonton	324	120	90	79
Pembina	Pembina-Edmonton	706	106	103	110
Producers/Westspur	Midale-Cromer	698	54	82	97
South Saskatchewan	Fosterton-Regina	282	27	34	33
Texaco	Wizard Lake-Edmonton	166	52	51	49
Trans Prairie	Virden-Cromer, Weyburn-Midale and Boundary Lake-Dawson Creek	379	24	30	43

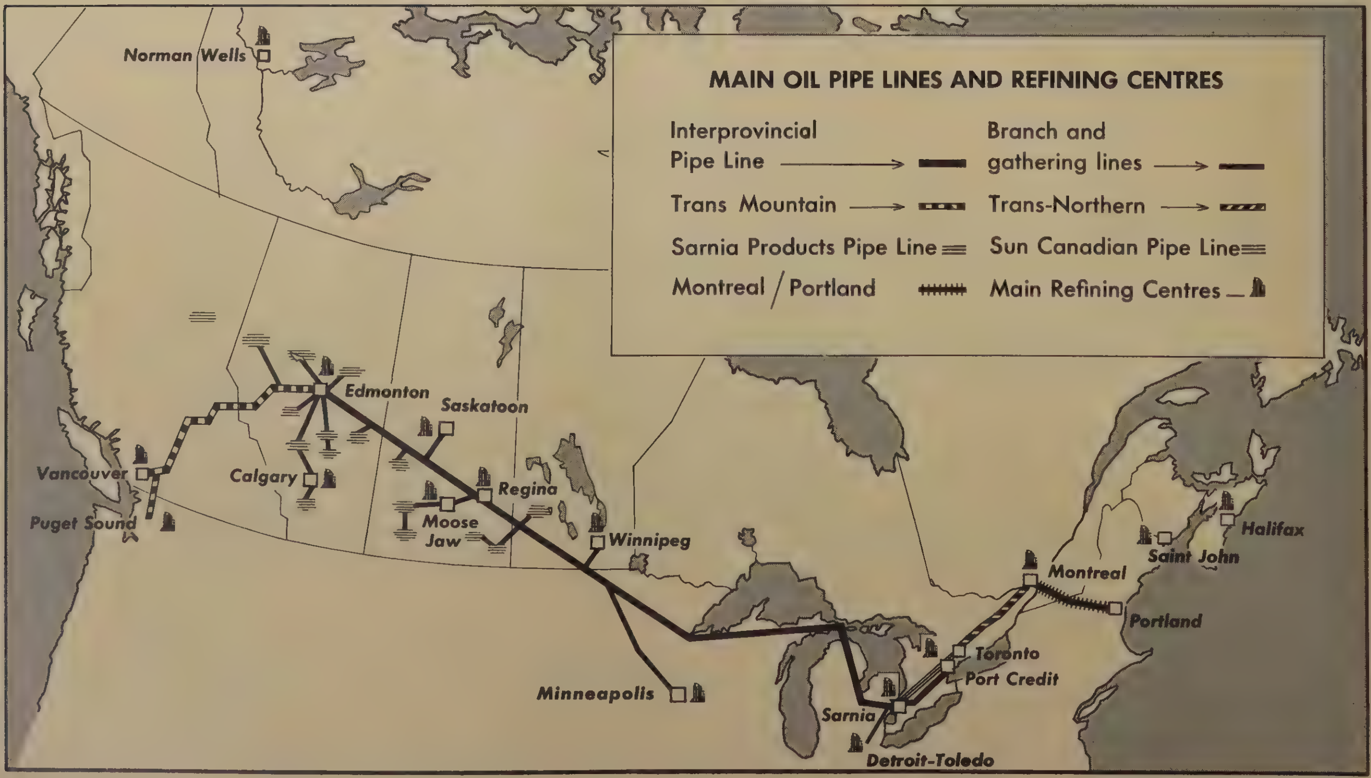
**Trunk line figures are length of line only and do not include parallel lines (looping), etc. Gathering system figures are total length of pipe.*

Refinery capacity up three and a half times since 1946

New refineries and the expansion of existing plants have more than trebled the nation's refining capacity since 1946. A five-fold increase has taken place in B.C. and on the prairies, where intensive refinery construction and expansion closely followed the discovery of large supplies of crude oil.

Rated refinery capacity (barrels per day)

Year	*B.C.*	*Prairies*	*Ontario*	*Quebec*	*Atlantic Provinces*	*Canada*
1939	22,700	35,570	44,500	64,500	32,750	200,020
1946	21,800	40,815	77,950	71,000	34,300	245,865
1951	28,850	120,700	79,400	160,000	22,300	411,250
1956	71,900	177,400	151,900	241,000	42,300	684,500
1957	78,200	186,500	204,400	255,300	44,800	769,200
1958	98,200	182,000	227,500	264,300	49,300	821,300
1959	101,500	189,700	246,500	264,500	49,300	851,500
1960	103,400	198,500	247,200	291,500	94,300	934,900



Canada's natural gas

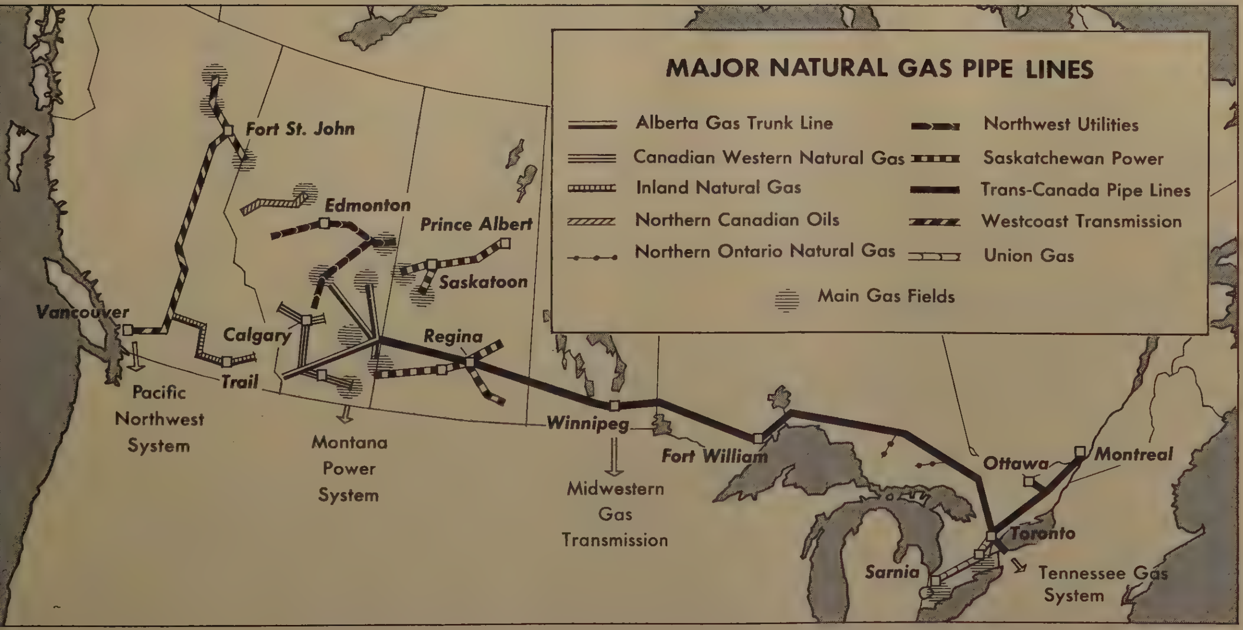
The natural gas industry entered a period of rapid expansion with the construction of pipe lines to major Canadian markets. Western gas was first piped to the Pacific Coast in 1957, and reached Ontario in the fall of 1958. Large markets in the United States, being made available through construction of pipe lines to the west coast and midwest, will bring rapid development of the Canadian gas industry in the immediate future.

	1948	*1951*	*1956*	*1957*	*1958*	*1959*	*1960*
NATURAL GAS RESERVES							
Trillions† of cubic feet	*	*	19.0	20.7	23.3	26.6	30.7
PRODUCING GAS WELLS**							
Drilled during year	30	135	192	197	226	310	292
Capable of producing	362	559	1,487	1,659	1,916	2,206	2,523
GAS PRODUCTION**							
Millions of cubic feet per day	181	257	577	736	1,049	1,306	1,541
GAS CONSUMPTION							
Millions of cubic feet per day							
Sales in Canada	121	178	395	463	564	774	887
Exports	*	*	26	43	238	232	249
Imports	*	*	43	84	95	38	17

† 1 Trillion—1,000,000,000,000.

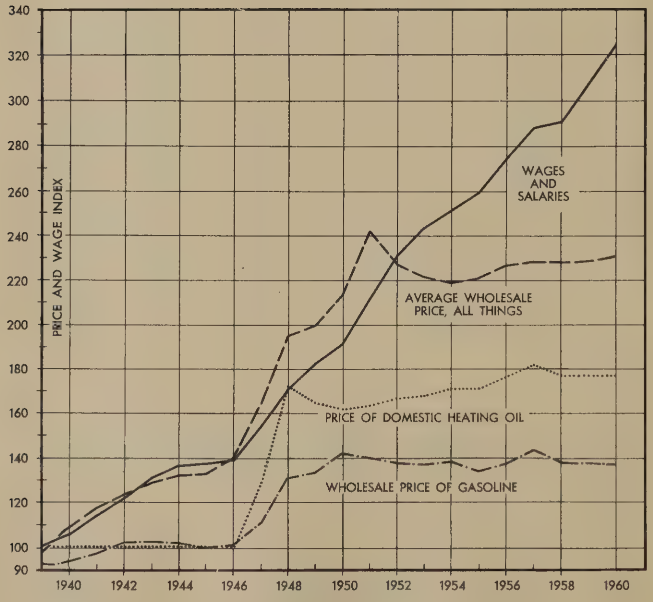
* Complete data not available

**Western Canada only. Some 3,100 wells in eastern Canada produce less than one percent of the Canadian total.



Price trends

In spite of the enormous investment required to develop Canada's oil industry, technical progress has kept price increases to a minimum. Since 1939 the wholesale price of gasoline has risen only 44 percent, the price of heating oil 74 percent. During the same period, the average wholesale price of all commodities has increased over 130 percent, while wages and salaries are up more than 200 percent.



Price trends

	1939	*1946*	*1957*	*1958*	*1959*	*1960*
Gasoline wholesale price index*	94.1	103.6	143	139.6	137.9	135.8
Domestic heating oil price index**	100	100	182	176	177	174
General wholesale price index*	99.2	138.9	227.4	227.6	230.6	230.6

Wage and salary trend

	1939	*1946*	*1957*	*1958*	*1959*	*1960*
Dollars a week*	23.44	32.48	67.93	70.43	73.47	75.83

**Dominion Bureau of Statistics*
***Imperial Oil data*

Product quality

While prices have remained low, product quality has increased steadily. Gasoline octane rating, for example, has risen substantially since 1947.

All-Canada average research octane number

	1947	*1949*	*1951*	*1953*	*1955*	*1957*	*1959*	*1960*
Premium	84.7	86.7	88.8	91.6	94.0	96.8	98.6	98.8
Regular	79.6	81.1	83.1	85.6	87.6	90.5	92.3	92.8

Octane rating is the measure of a gasoline's resistance to knocking in a car engine. The above figures are from a Canada-wide average compiled by the Ethyl Corporation of Canada Limited.

Breakdown of motorist's gasoline dollar

Largely due to road taxes, the price the motorist pays for gasoline at the service station is more than twice what the oil company receives for it.

(Based upon December 1, 1960, price of regular grade gasoline in 33 Canadian cities)

Oil company's share (wholesale price)	48.1%
Federal government's share (sales tax)	3.9%
Province's share (road tax)	30.3%
Service station operator's share	17.7%
	100.0%

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June, 1964

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We are pleased to send you the current edition of "Facts and Figures about Oil in Canada"

IMPERIAL OIL LIMITED

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IMPERIAL OIL LIMITED, JUNE 1964

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"Facts and Figures about Oil in Canada" outlines major features in the growth and development of the nation's petroleum industry since the first major discovery of oil at Leduc, Alberta, in 1947.

An important result of the growth of oil and gas production in Canada has been its contribution towards improving the nation's balance of trade. Exports of crude oil and natural gas amounted to $390 million in foreign exchange in 1963 compared to a negligible amount in 1950.

A growing source of export revenue is the sale to other countries of sulphur, extracted from natural gas, and of petrochemicals.

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Only in the past two years has the revenue from oil and natural gas production exceeded the annual expenditures on exploration and development. As it is, the cumulative net deficit on expenditures versus revenues exceeds $2 billion.

Estimated Capital Investment in the Petroleum Industry, 1946-1963 inclusive

	$ Billions
For exploration and development	6.2 (1)
For other facilities	4.6 (2)

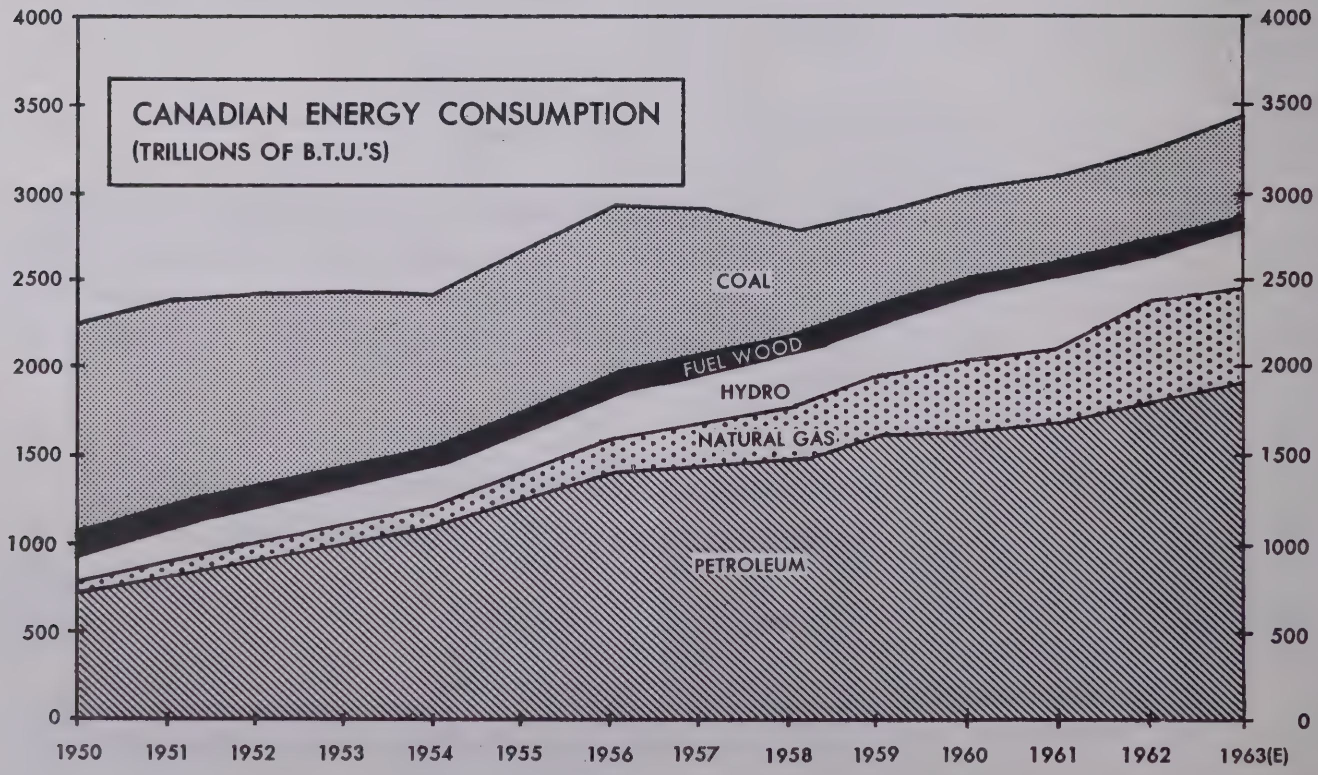
(1) I.O.L. estimate includes cost of land.

(2) D.B.S. estimate includes investment in refining, marketing, transportation, natural gas trunk and distribution systems and in petrochemical industry.

Canada's Demand for Energy

In the past ten years energy requirements have increased by 42 per cent, a growth in demand which has been satisfied by oil and natural gas. The construction of large-diameter pipe lines overcame problems of distance and climate and today oil and natural gas provide nearly three-quarters of Canada's total energy needs.

Natural gas, the use of which is growing rapidly in Canada, now represents the equivalent of some 200,000 barrels per day of oil, on the equivalent heat energy basis.



Canada's Need for Oil

Canadians are the second largest per capita consumers of petroleum products in the free world. In 1963 they used the equivalent of some 670 gallons (19.2 barrels) of oil each, compared to 710 gallons (20.3 barrels) for each individual in the U.S. In spite of its small population, Canada ranks among the top consumers of petroleum in the free world. More than half the nation's homes are heated by oil; there is one registered passenger car for approximately every four people; and there is more than one tractor for every occupied farm. The people of Canada are tied together by more than 400,000 miles of roads, 58,700 miles of railways and a vast network of inland waterways and airline routes.

Canada Uses Nearly One Million Barrels of Oil Products a Day

	1954	1956	1958	1960	1962	1963
			(barrels per day)			
British Columbia	60,000	78,000	74,000	82,000	90,000	92,000
Prairie Provinces	124,000	154,000	153,000	164,000	167,000	176,000
Ontario	189,000	242,000	269,000	299,000	319,000	345,000
Quebec	137,000	181,000	199,000	229,000	262,000	280,000
Atlantic Provinces	49,000	64,000	70,000	91,000	99,000	104,000
	559,000	719,000	765,000	865,000	937,000	997,000 (E)

1 barrel = 35 Imperial gallons = 42 U.S. gallons.

Oil Consuming Units in Canada (all figures in thousands)

Year	Oil-heated households	Vehicle registrations	Tractors on farms
1939	—	1,439	—
1941	67	1,573	175
1946	—	1,622	227
1951	774	2,868	400
1956	1,843	4,255	500
1961	2,598	5,517	550
1962	2,691	5,775	557
1963	2,739	5,935 (E)	565 (E)

Canada's Oil Supply

Canada's demand for petroleum products is met mainly by Canadian refineries processing domestic and imported crude. In addition, and because of economic reasons, some fuel oils and specialty products are imported.

In 1963 domestic crude supplied about 56 per cent of Canadian refinery runs. When exports are taken into account, Canadian crude oil and natural gas liquids production was the equivalent of about 84 per cent of the nation's needs. With this growth in domestic production crude oil imports dropped from 90 per cent of refinery requirements in 1946 to 44 per cent in 1963.

Quebec and the Atlantic Provinces are the major areas supplied by imported crude oil.

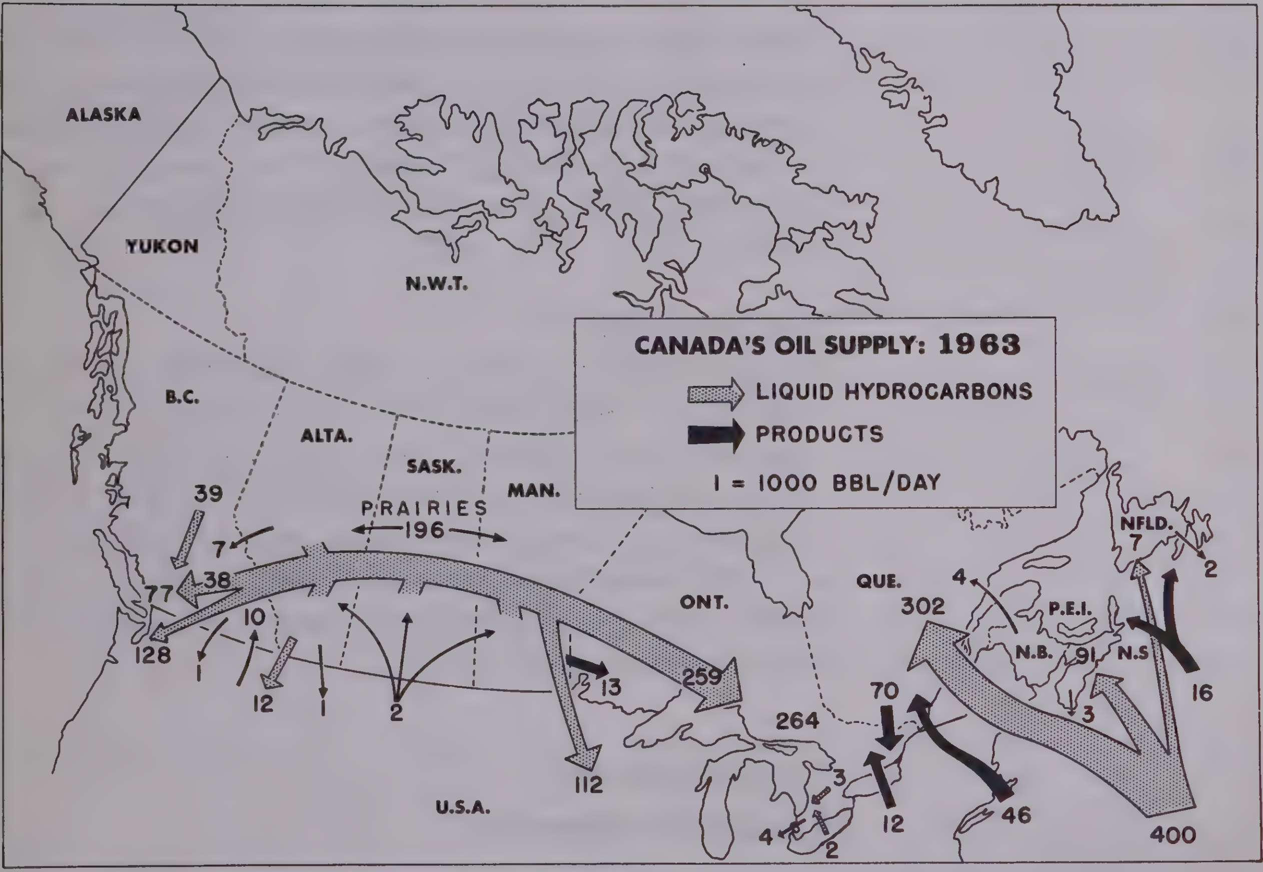
	Liquid Hydrocarbons					
	Domestic Demand	Domestic Production(1)	Production as a per cent of demand	Crude exports	Crude imports	Product imports
Year	(thousands of barrels per day*)			(thousands of barrels per day)		
1946	197	21	11	—	174	26
1950	306	80	26	—	224	75
1951	361	133	37	1	228	85
1954	470	267	57	7	210	99
1955	553	361	65	46	237	109
1956	652	476	73	116	292	106
1957	660	505	77	151	306	95
1958	674	462	68	82	295	80
1959	749	522	70	92	319	105
1960	777	544	70	113	346	98
1961	822	643	78	186*	365	81
1962	867	735	85	239*	371	82
1963 (E)	937	787	84	252*	402	85

**Includes natural gas liquids*

(1) *Includes liquids reinjected to producing formations.*

Canada's Oil Markets

Since 1946, there has been a rapid expansion in the market for Canadian crude oil: use of domestic oil in Canadian refineries has increased from 19,000 to some 500,000 barrels daily; and exports to the U.S. have risen. The development of long-distance pipe lines from Alberta to Ontario and British Columbia, with spur lines to U.S. markets, has been a major stimulant to the growth of domestic crude oil and natural gas liquids production which, in 1963, averaged 787,000 barrels a day, of which some 252,000 barrels daily was exported to the U.S.



Oil Progress in Canada

In the west . . .

In western Canada, where the major reserves of crude oil and natural gas are located, there were only twenty-four oil and gas fields in 1946. Crude oil production was estimated at 21,000 barrels a day and reserves stood at about 72 million barrels. A period of rapid growth followed Imperial Oil's discovery of major crude reserves at Leduc, Alberta, in 1947. By 1963 western Canada was producing oil and gas from about 22,000 wells in some 675 oil and gas fields.

Western Canada also holds what is potentially one of the world's largest deposits of oil—the Athabasca tar sands. Located some 300 miles north-east of Edmonton and covering an area of about 21,000 square miles along the banks of the Athabasca River, the oil-saturated grains of sand are estimated to hold some 300 billion barrels of recoverable crude oil.

About 4,000 square miles of the tar sands are under lease and permit to industry representatives, several of whom have placed proposals for development before the Alberta Oil and Gas Conservation Board. One company has been granted a permit to erect a 45,000 barrel-per-day extraction plant.

And in the east . . .

Oil was first commercially produced and refined in Ontario in 1857. In 1963 production of oil in eastern Canada, almost entirely in Ontario, was 3,322 barrels a day, which represents less than one-half of one per cent of the country's total production. Exploration has been carried out in all of the eastern provinces from time to time but only in Ontario has the industry been successful in finding commercial quantities of oil.

Canada's Oil and Natural Gas Reserves

At the present rate of production, Canada's proven reserves of total liquid hydrocarbons (5.6 billion barrels) are equivalent to about 20 years' requirements. Proven natural gas reserves (37.0 trillion cubic feet) are sufficient for about 35 years at present production rates. The growing demand for all forms of energy necessitates a continuing exploration program in order to build reserves for future needs.

Canada's Oil and Natural Gas Progress 1946-1963

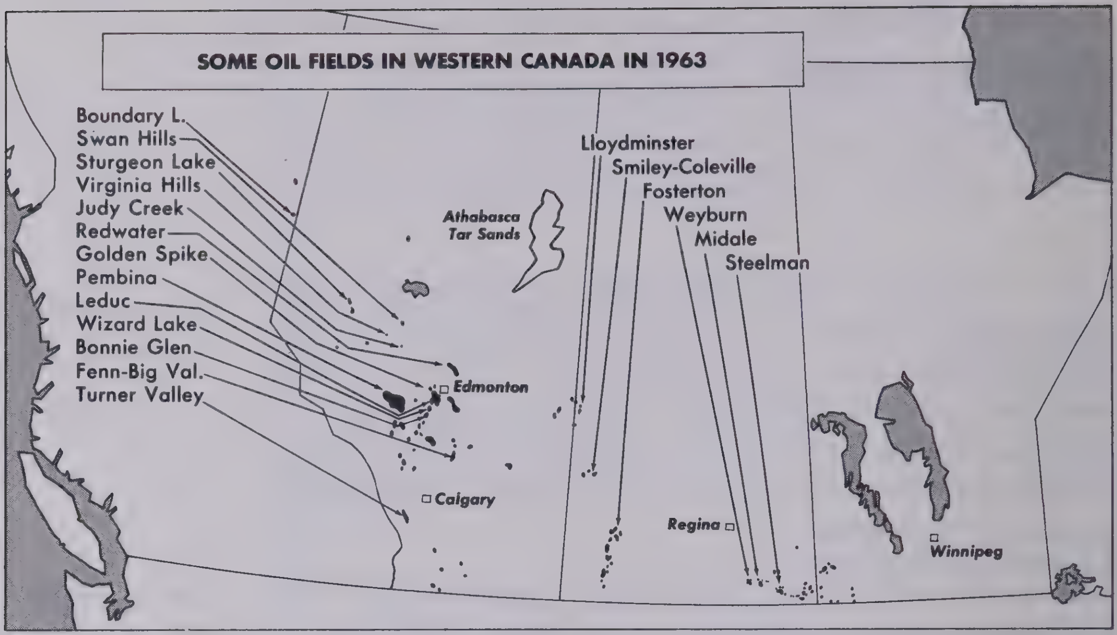
	1946	1957	1958	1959	1960	1961	1962	1963
Land holdings (Millions of Acres at December 31)	21	241	285	291	281	281	266	291
Geophysical surveys (Crew Months Worked)	136	1,435	1,142	820	671	662	660	657
Exploration, development & producing expenditures (Millions of Dollars)	22	646	612	630	628	669	570	638
Net revenue from oil & natural gas production (Millions of Dollars)	18	420	382	414	433	531	644	708
Oil wells								
Completed during year	75	1,909	1,583	1,425	1,497	1,418	1,288	1,355
Capable of producing at December 31 (1)	520	12,179	13,170	14,313	15,372	16,484	17,011	18,031
Reserves at December 31(2) (Millions of Barrels)	72	3,269	3,650	3,999	4,217	4,749	5,176	5,629
Net oil Production(2) (Thousands of Barrels per day)	21	505	462	521	541	640	732	785
Natural gas reserves Trillions of cubic feet	N.A.	20.7	23.3	26.6	30.7	33.5	35.4	37.0
Producing gas wells								
Drilled during year	58	362	376	410	384	476	403	424
Capable of producing(3)	294	1,659	1,916	2,206	2,509	2,902	3,215	3,610
Gas production (4) Millions of cubic feet per day	143	763	1,075	1,289	1,560	1,951	2,707	2,892
Gas Imports	—	85	88	32	15	15	15	18
Gas sales Millions of cubic feet per day								
Sales in Canada	100	462	569	776	887	1,033	1,151	1,232
Exports	—	59	247	228	307	476	990	1,045

(1) Western Canada only. Some 1,900 wells in eastern Canada produce less than ½ of one per cent of the Canadian total. (2) Total liquid hydrocarbons.

(3) Western Canada only. Some 3,100 wells in eastern Canada produce less than one per cent of the Canadian total.

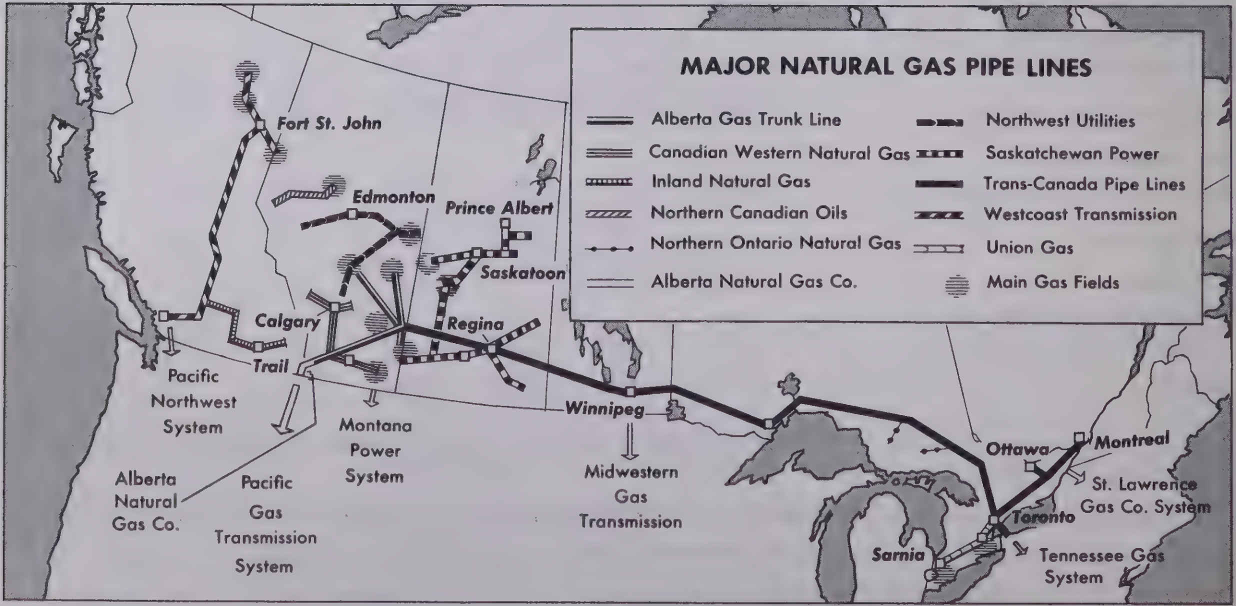
(4) Producible Gas. (Gas produced at wellhead before flaring off, shrinkage or other loss.)

Reserves data from the Canadian Petroleum Association.


SOME OIL FIELDS IN WESTERN CANADA IN 1963

Canada's Natural Gas

The natural gas industry entered a period of rapid expansion with construction of pipe lines to major Canadian and U.S. markets. Western natural gas was first piped to the Pacific coast in 1957; the Trans-Canada pipe line brought it to Ontario in the fall of 1958. With the recent completion of new pipe lines to the U.S., Canada's natural gas production is expected to continue its rapid growth. In 1963 Canadian marketable natural gas production reached 2.4 billion cubic feet per day.


MAJOR NATURAL GAS PIPE LINES

Crude Oil
Field Prices

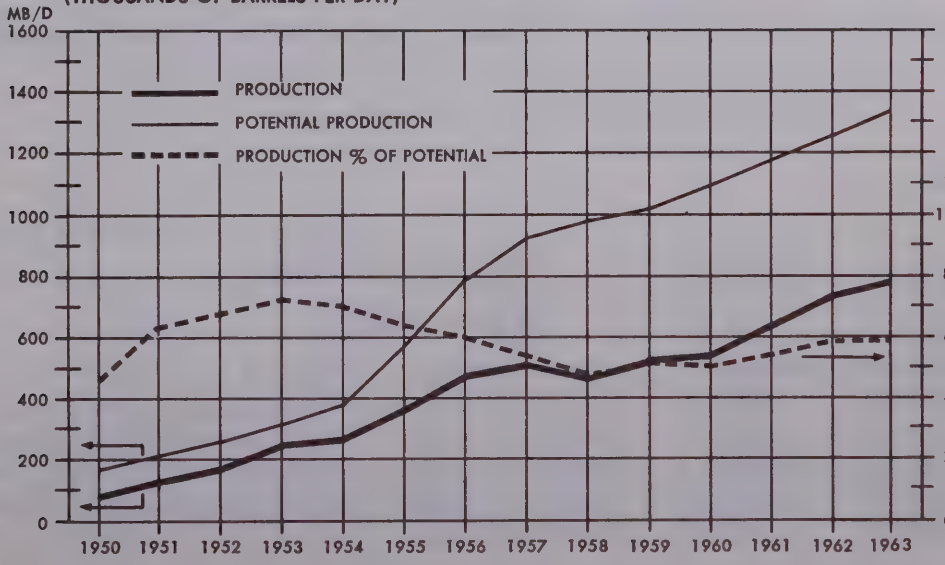
Distance from markets, places Canadian crude producers at a disadvantage. Western Canadian crude oil sold in the refining centres of Southern Ontario and adjacent export markets must compete with crude from other sources. The wellhead price, therefore, becomes the competitive price in these markets less the cost of transportation from the field.

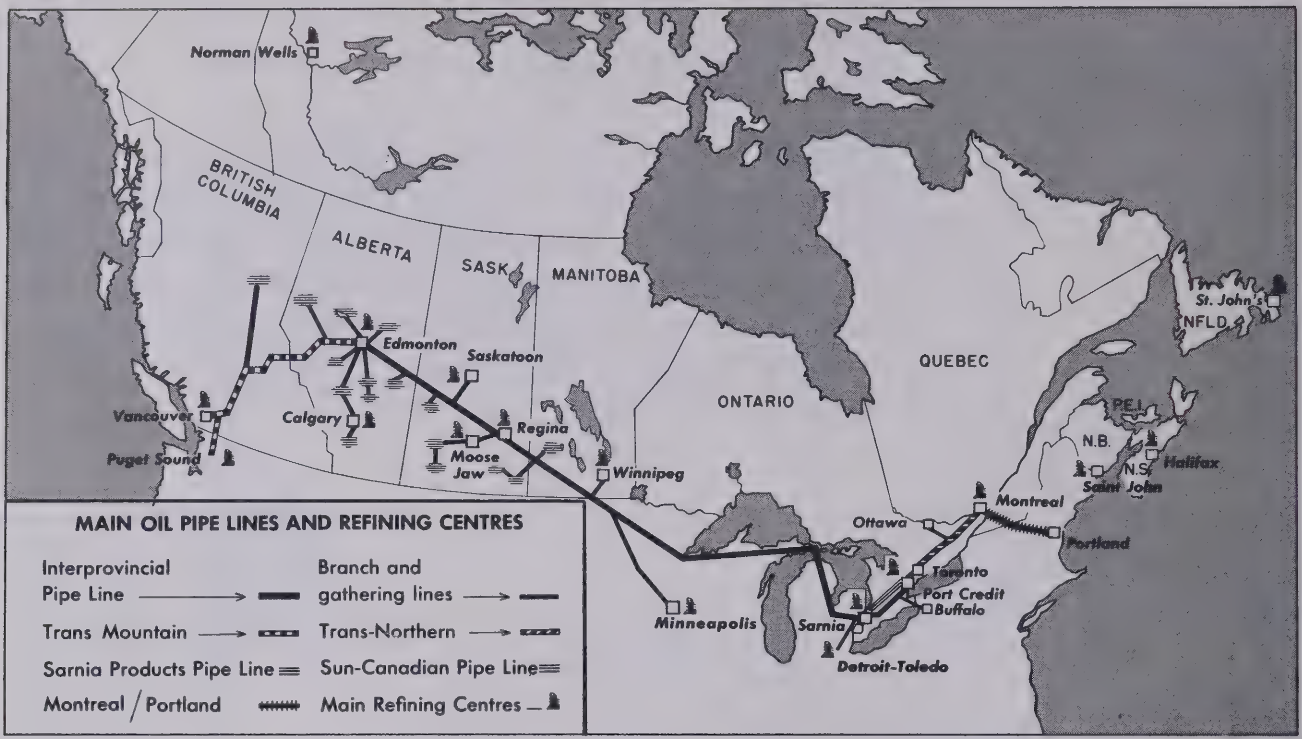
	Gravity	Wellhead price per barrel (¹)	
Redwater	35°	$2.62	Can. Funds
Pembina	37°	2.55	Can. Funds
Boundary Lake	35°	2.10	Can. Funds
Swan Hills	42°	$2.64-$2.68	Can. Funds
Illinois	36°	3.00	U.S. Funds
California-Greeley	37°	3.12	U.S. Funds
Mid-Continent	36°	2.97	U.S. Funds
Texas—East	39°	3.10	U.S. Funds
—West	26°	3.00	U.S. Funds
Venezuelan (Guanipa)	30°	2.53(²)	U.S. Funds
Arabian (Persian Gulf)	34°	1.80(²)	U.S. Funds

(¹) *March 1964*
(²) *f.o.b. Loading Port*

PRODUCTION VS. POTENTIAL OF TOTAL LIQUID HYDROCARBONS

(THOUSANDS OF BARRELS PER DAY)





Canada's Oil Pipe Lines

A vast network of pipe lines carries Canada's crude oil westward, via the Trans Mountain line, to Vancouver, and the U.S. Pacific northwest; and eastward, via the Interprovincial line, to refineries on the prairies and Ontario, and to refineries in the north-central area of the U.S. Refineries in the Montreal area are supplied mainly through a pipe line carrying imported crude delivered by tankers at Portland, Maine.

There are also six major products pipe lines.

Pipe Line mileage at year-end

Year	Mileage	Year	Mileage
1939	182	1956	6,208
1946	418	1960	8,010
1950	1,423	1961	9,000
1952	2,500	1962	9,850
1954	4,808	1963	10,100

Mileages shown include both crude and product lines, total lengths of lines which run partly through the U.S., and major gathering lines. Parallel lines (looping) are not included.

Some Statistics About Crude Oil Pipe Lines

		Length*	Throughput (thousands of barrels per day)			
Trunk Lines	From-To:	Miles	1958	1960	1962	1963
Interprovincial/Lakehead	Redwater-Port Credit	2023	300	349	432	471
Montreal/Portland	Portland-Montreal	236	215	216	216	256
Trans Mountain	Edmonton-Vancouver & Puget Sound	787	81	113	198	192
Western Pacific	Fort St. John-Kamloops	505	—	—	20	34
Principal Gathering Systems						
Britamoil	Duhamel-Edmonton	388	41	44	44	43
Imperial	Leduc & Redwater-Edmonton	319	82	79	104	94
Federated	Swan Hills-Edmonton	411	—	20	59	67
Producers/Westpur	Midale-Cromer	859	70	97	120	132
South Saskatchewan	Fosterton-Regina	313	31	33	44	50
Texaco	Wizard Lake-Edmonton	170	39	49	86	92
Peace River	Sturgeon Lake-Bickerdike & Edmonton	405	11	15	25	37
Trans Prairie	Virden-Cromer, Weyburn-Midale and Boundary Lake-Fort St. John	452	32	43	70	80
Pembina	Drayton Valley-Edmonton	809	N.A.	N.A.	113	117

**Trunk line figures are length of line only and do not include parallel lines (looping), etc. Gathering system figures are total length of pipe.*

Refinery Capacity

New refineries and the expansion of existing plants have quadrupled the nation's refining capacity since 1946. A five-fold increase has taken place in B.C. and on the prairies, where intensive refinery construction and expansion closely followed the discovery of large supplies of crude oil.

Rated refinery capacity (Barrels per calendar day at year-end)

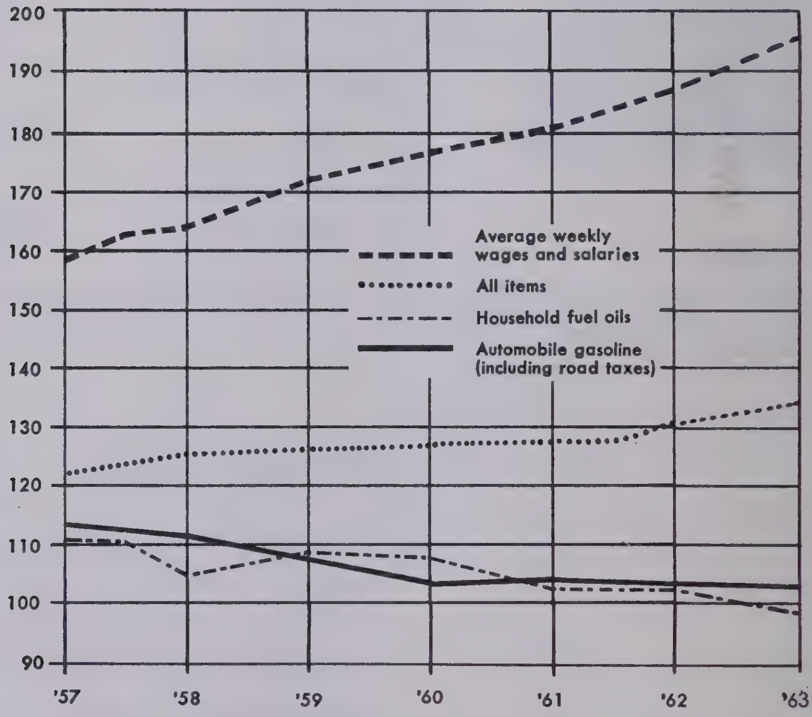
Year	B.C.	Prairies	Ontario	Quebec	Atlantic Provinces	Canada
1946	21,800	40,815	77,950	71,000	34,300	245,865
1956	71,900	177,400	151,900	241,000	42,300	684,500
1958	98,200	182,000	227,500	264,300	49,300	821,300
1960	103,400	198,500	247,200	291,500	94,300	934,900
1961	100,000	201,000	255,000	293,500	105,200	954,700
1962	97,200	202,100	264,000	294,000	105,800	963,100
1963	99,000	201,500	308,000	305,000	106,300	1,019,800

Trends in Product Prices

In spite of the enormous investment required to develop Canada's oil industry, technical progress and intense competition have kept price increases to a minimum. Since 1957 the average retail price of gasoline has dropped almost 9 per cent despite substantial increases in provincial road taxes. In the same period the average price of all items has increased by some 9 per cent, and wages and salaries rose nearly 23 per cent.

Source: Dominion Bureau of Statistics

Base: 1949 = 100



Consumer Price Indexes*

	1957	1958	1959	1960	1961	1962	1963
Gasoline (including road tax)	112.2	110.8	107.6	103.6	104.2	103.9	102.5
Household fuel oil............	113.5	107.0	108.6	107.9	103.8	101.8	97.9
All items.....................	121.9	125.1	126.5	128.0	129.2	130.7	133.0
Wage and Salary Trend*							
Dollars a week................	67.93	70.43	73.47	75.81	78.11	80.59	83.41

**Dominion Bureau of Statistics.*

Product Quality

While prices have remained low, product quality has increased steadily. Gasoline octane rating, for example, has risen substantially since 1947.

All-Canada average research octane number

	1947	1951	1953	1955	1957	1959	1961	1963
Premium	84.7	88.8	91.6	94.0	96.8	98.6	99.0	99.2
Regular	79.6	83.1	85.6	87.6	90.5	92.3	93.0	93.5

Octane rating is the measure of a gasoline's resistance to knocking in a car engine. The above figures are from a Canada-wide average compiled by the Ethyl Corporation of Canada Limited.

Breakdown of motorist's gasoline dollar

Largely due to road taxes, the price the motorist pays for gasoline at the service station is more than twice what the oil company receives for it.

(Based upon December 1963 average price of regular grade gasoline in principal Canadian cities)

Oil company's share (wholesale price)	46.6%
Federal government's share (sales tax)	4.4
Province's share (road tax)	32.8
Service station operator's share	16.2
	100.0%

Provincial Road Taxes on Gasoline (cents per gallon)

	Nfld.	N.S.	N.B.	P.E.I.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1946	16*	10	10	10	8	8	7	8	7	7
1963	19	19	18	18	15	15	14	14	12	13

**Import duty*

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The following statistics have been selected for their value in highlighting the development of Canada's petroleum industry. Some of the figures used, particularly those for 1965, are preliminary estimates (E) and are subject to revision.

IMPERIAL OIL LIMITED, MAY 1966

Although oil has been produced in Canada since 1857, it was not until the first major discovery by Imperial Oil at Leduc, Alberta, in 1947 that the nation's oil industry began to acquire a leading stature.

"Facts and Figures about Oil in Canada" outlines major features in the growth and development of Canada's petroleum industry since that event.

Crude oil is now the leading mineral in Canada in value of production, a total of $718 million in 1965; in addition, exports of liquid hydrocarbons, natural gas, sulphur and petrochemicals are making very substantial contributions toward improving Canada's foreign trade position. It is anticipated that in about one year, complete self-sufficiency should be achieved, i.e., the value of Canada's petroleum imports will be balanced by the value of exports of crude oil, natural gas liquids, natural gas and sulphur. In 1965 exports of these materials totalled some $471 million.

The petroleum industry has spent $12.7 billion searching for and developing oil and gas fields, building pipe lines, refineries and other facilities. Only in the past four years has revenue from oil and natural gas production begun to exceed the amount spent on exploration and development. As it is, the present net deficit exceeds $2 billion.

Estimated Capital Investment in the Petroleum Industry, 1946-1965 inclusive

	$ Billions
For exploration and development	7.5 (1)
For other facilities	5.2 (2)

(1) I.O.L. estimate includes cost of land.

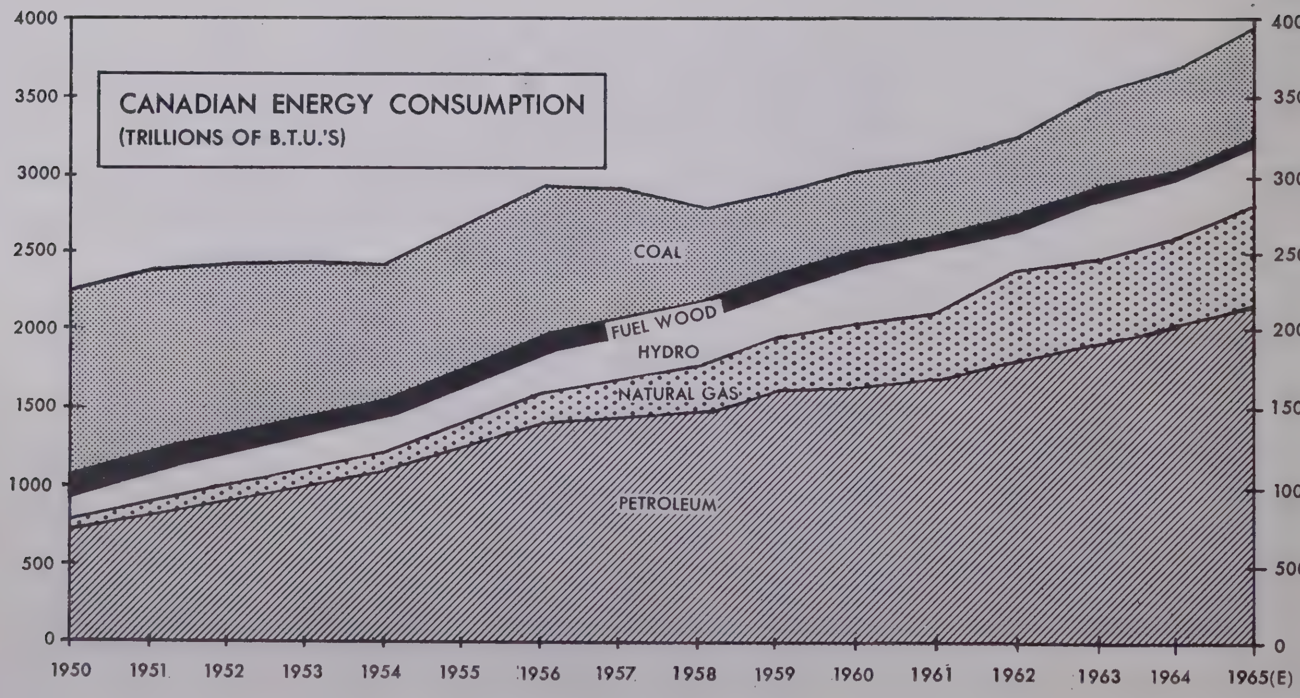
(2) D.B.S. estimate includes investment in refining, marketing, transportation, natural gas trunk and distribution systems and the petrochemical industry.

Canada's Demand for Energy

Canada's energy requirements have been increasing at an average rate of nearly five per cent per year for the past decade. This growth in demand has been more than supplied by petroleum and natural gas. Coal and wood have declined in importance.

The use of natural gas is growing rapidly and its consumption in Canada now represents the equivalent of some 306,000 barrels per day of oil, on a heat energy basis.

Oil and natural gas now supply about 71 per cent of Canada's energy needs.



Canada's Need for Oil

Climate, distance and growing industrial strength combine to make Canadians the largest consumers of petroleum products per capita in the free world. Preliminary estimates indicate that in 1965 they used the equivalent of some 750 gallons (21.4 barrels) each, compared to 741 gallons (21.2 barrels) for each person in the U.S. About 42 per cent of our oil consumption is for transportation and about half for residential, commercial and industrial purposes. The balance is used for non-energy purposes such as lubricants and petrochemicals. Oil heats more than half of the nation's homes; there is one registered passenger car for approximately four persons—or about 13 for every mile of road; and there is more than one tractor for every occupied farm.

Canada Uses More Than One Million Barrels of Oil Products a Day

	1954 (barrels per day)	1958	1960	1962	1964	1965 (E)
British Columbia	60,000	74,000	82,000	90,000	99,000	105,000
Prairie Provinces	124,000	153,000	164,000	167,000	183,000	193,000
Ontario	189,000	269,000	299,000	319,000	358,000	393,000
Quebec	137,000	199,000	229,000	262,000	304,000	335,000
Atlantic Provinces	49,000	70,000	91,000	99,000	117,000	127,000
	559,000	765,000	865,000	937,000	1,061,000	1,153,000

1 barrel = 35 Imperial gallons = 42 U.S. gallons

Oil Consuming Units in Canada (all figures in thousands)

Year	Oil-heated households	Vehicle registrations	Tractors on farms
1946	—	1,622	227
1951	774	2,872	400
1956	1,843	4,265	500
1961	2,598	5,517	550
1962	2,691	5,775	557 (E)
1963	2,739	6,075	565 (E)
1964	2,808	6,382	572 (E)
1965	2,896	6,700 (E)	578 (E)

Canada's Oil Supply

In less than 20 years Canada's oil production has increased by more than 4,300 per cent. Meanwhile, the domestic demand has increased by about 500 per cent.

Canada's demand for petroleum products is met mainly by Canadian refineries processing domestic and imported crudes. In addition some fuel oil and specialty products are imported.

The needs of Canadian refineries west of the Ottawa Valley are almost entirely supplied by Canadian crudes, as is required by the National Oil Policy. Quebec and the Atlantic Provinces are supplied by imported crude oil. In 1965 domestic crudes accounted for about 50 per cent of Canadian refinery runs. Canada would be about 92 per cent self-sufficient in liquid hydrocarbons if all domestic production were retained in the country.

	Crude Oil and Natural Gas Liquids					
	Domestic Processing Demand (thousands of barrels per day)	Domestic Production (1) (thousands of barrels per day)	Production as a per cent of demand	Crude Exports (thousands of barrels per day)	Crude Imports (thousands of barrels per day)	Product Imports (2) (thousands of barrels per day)
1946	197	21	11	—	174	26
1950	306	80	26	—	224	75
1951	361	133	37	1	228	85
1954	470	267	57	7	210	99
1955	553	361	65	46	237	109
1956	652	476	73	116	292	106
1957	660	505	77	151	306	95
1958	674	462	68	82	295	80
1959	749	522	70	92	319	105
1960	777	544	70	113	346	98
1961	822	643	78	186*	365	81
1962	867	735	85	239*	371	82
1963	936	786	84	252*	402	90
1964	962	862	89	290*	393	112
1965 (E)	1,001	921	92	315*	395	160

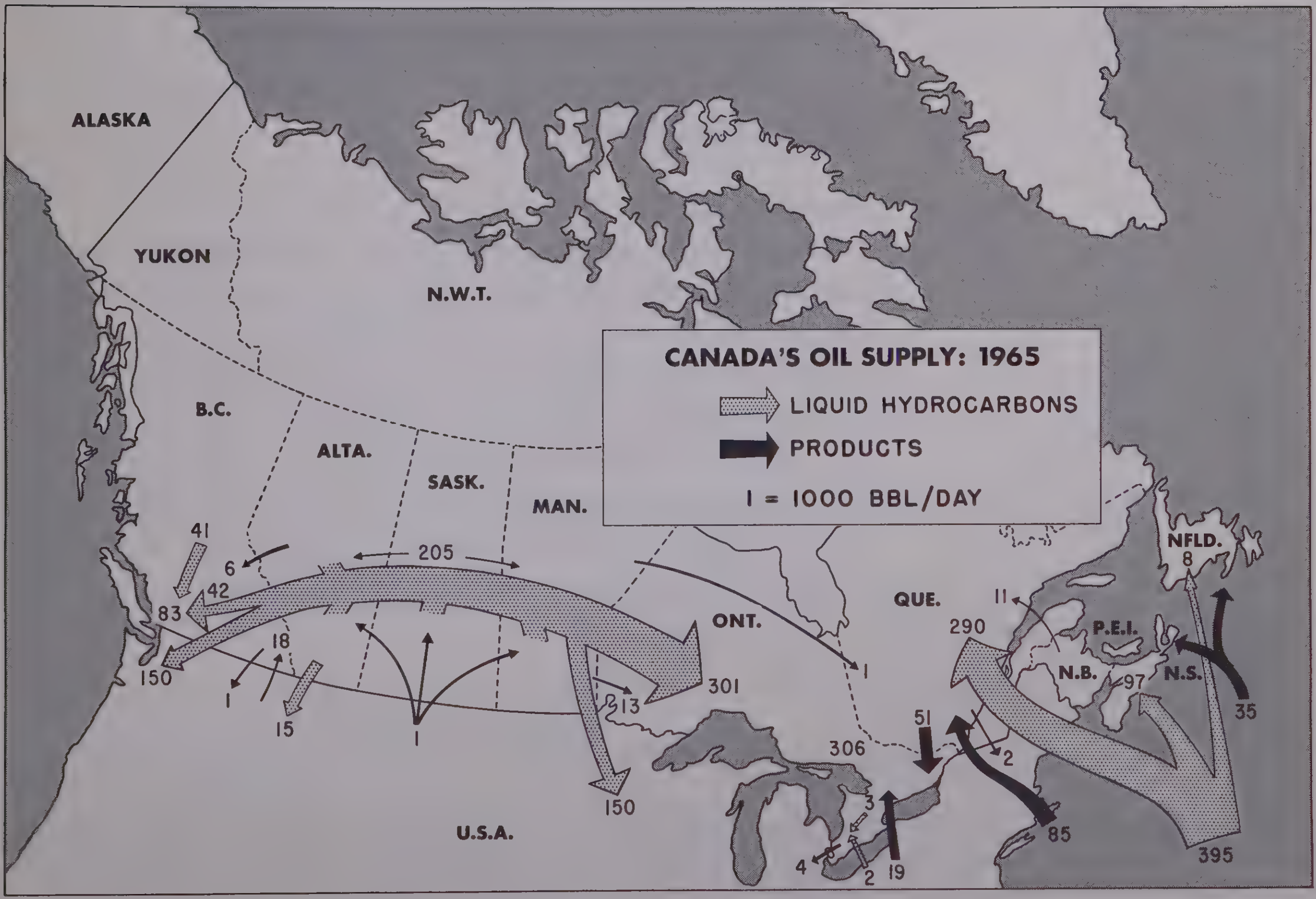
**Includes natural gas liquids.*

(1) *Includes liquids reinjected to producing formations.*

(2) *Offset by small volumes of product exports.*

Canada's Oil Markets

Following the discovery of oil at Leduc and the building of long-distance pipe lines from Alberta to Ontario and British Columbia, there was a rapid expansion of markets for Canadian crude oil. The use of domestic oil in Canadian refineries has increased from 19,000 to some 574,000 barrels daily. This growth in domestic markets, plus export markets amounting to some 315,000 barrels per day, together with natural gas liquids production, brought gross production to about 921,000 barrels per day in 1965.



Oil Progress in Canada

In the west . . .

Prior to the discovery of oil at Leduc, there were only twenty-four oil and gas fields in western Canada. Oil production had dwindled to approximately 21,000 barrels per day and remaining reserves were estimated at 72 million barrels. Rapid expansion followed the discovery and by the end of 1965 western Canada was producing oil and gas from 24,600 wells in 675 oil and gas fields.

The Athabasca tar sands hold, potentially, one of the world's largest deposits of oil. Covering an area of 21,000 square miles, the sands are estimated to contain some 300 billion barrels of recoverable oil. One company is currently building a 45,000 barrel-per-day extraction plant.

Another potential source of large oil reserves is the pools of "black oil" which are found in northern Alberta. It is too viscous to be produced by normal methods and work is underway to develop economic methods of extraction.

Exploration is also being carried on off the west coast and in the Arctic.

And in the east . . .

The cradle of Canada's oil industry, Ontario has been commercially producing and refining oil since 1857. In 1965 Ontario's oil production reached 3,504 barrels per day—less than one-half of one per cent of Canada's total production. Oil seekers have explored all of the eastern provinces but only in Ontario has oil been found in appreciable commercial quantities. During 1965 exploration was carried out on large offshore acreages in Hudson Bay and off the coasts of Nova Scotia and Newfoundland.

Canada's Oil and Natural Gas Progress 1946-1965

	1946	1958	1960	1961	1962	1963	1964	1965(E)
Land holdings (Millions of acres at December 31)	21	285	281	281	266	291	423	522
Geophysical surveys (Crew Months Worked)	136	1,142	671	662	660	683	655	666
Exploration, development & producing expenditures (Millions of dollars)	22	612	628	669	570	638	743	823
Net revenue from oil & natural gas production (Millions of dollars)	18	382	433	531	644	708	779	850
Oil wells Completed during year	75	1,583	1,497	1,418	1,288	1,355	1,687	1,820
Capable of producing at December 31 (1)	520	13,170	15,372	16,484	17,011	18,031	19,153	20,451
Reserves at December 31 (2) (Millions of barrels)	72	3,650	4,217	4,749	5,176	5,629	7,065	7,710
Net oil production (2) (Thousands of barrels per day)	21	463	544	643	734	786	853	921
Natural gas reserves (Trillions of cubic feet)	N.A.	23.3	30.7	33.5	35.4	37.0	43.4	44.4
Producing gas wells Drilled during year	58	376	384	476	403	424	363	421
Capable of producing (3)	294	1,916	2,509	2,902	3,215	3,610	3,891	4,169
Gas production (4) (Millions of cubic feet per day)	143	1,075	1,562	1,950	2,708	2,955	3,318	3,690
Gas sales (Millions of cubic feet per day) Sales in Canada	100	569	887	1,033	1,151	1,232	1,450	1,618
Exports	—	247	307	476	990	1,045	1,100	1,114

Reserves data from the Canadian Petroleum Association.

(1) *Western Canada only. Some 1,900 wells in eastern Canada produce less than ½ of one per cent of the Canadian total.*

(2) *Total liquid hydrocarbons.*

(3) *Western Canada only. Some 3,100 wells in eastern Canada produce less than one per cent of the Canadian total.*

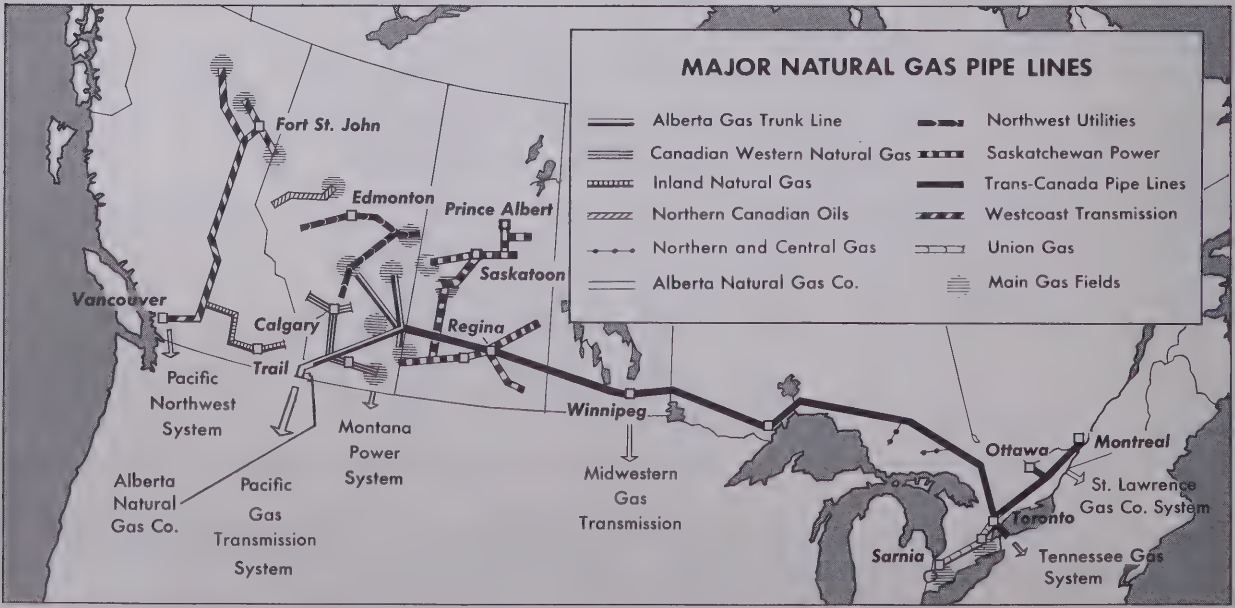
(4) *Producible Gas. (Gas produced at wellhead before flaring off, shrinkage or other loss.)*

Canada's Oil and Natural Gas Reserves

Canada's remaining proven reserves of liquid hydrocarbons (excluding the tar sands and "black oil" fields) would last for 23 years at the present rate of production. Proven natural gas reserves are sufficient for about 35 years. However, many years elapse between the discovery of an oil or gas field and the time it reaches mature production. Thus there is a necessity for a continuing exploration program to meet Canada's future energy needs.

Canada's Natural Gas

Following the construction of large-diameter pipe lines to the West Coast in 1957 and eastwards to Ontario and Quebec in 1958, natural gas has rapidly grown from its comparatively minor role to become a major source of energy in Canada. Substantial export markets have been developed and applications for increased sales to the U.S. are under consideration. In 1965 deliveries of natural gas to transmission lines exceeded 2.7 billion cubic feet per day, including exports averaging some 1.1 billion cubic feet per day.



Crude Oil Field Prices

Canadian crude oil suffers from the disadvantage of having to travel relatively long distances to its major markets in Ontario and adjacent export areas. There it must compete with crudes from other sources. The wellhead price, therefore, reflects the competitive price in these markets less the cost of transportation from the field.

	Gravity	Wellhead price per barrel (1)	
Redwater	35°	$2.62	Can. Funds
Pembina	37°	2.55	Can. Funds
Boundary Lake	35°	2.12	Can. Funds
Swan Hills	42°	$2.68-$2.72	Can. Funds
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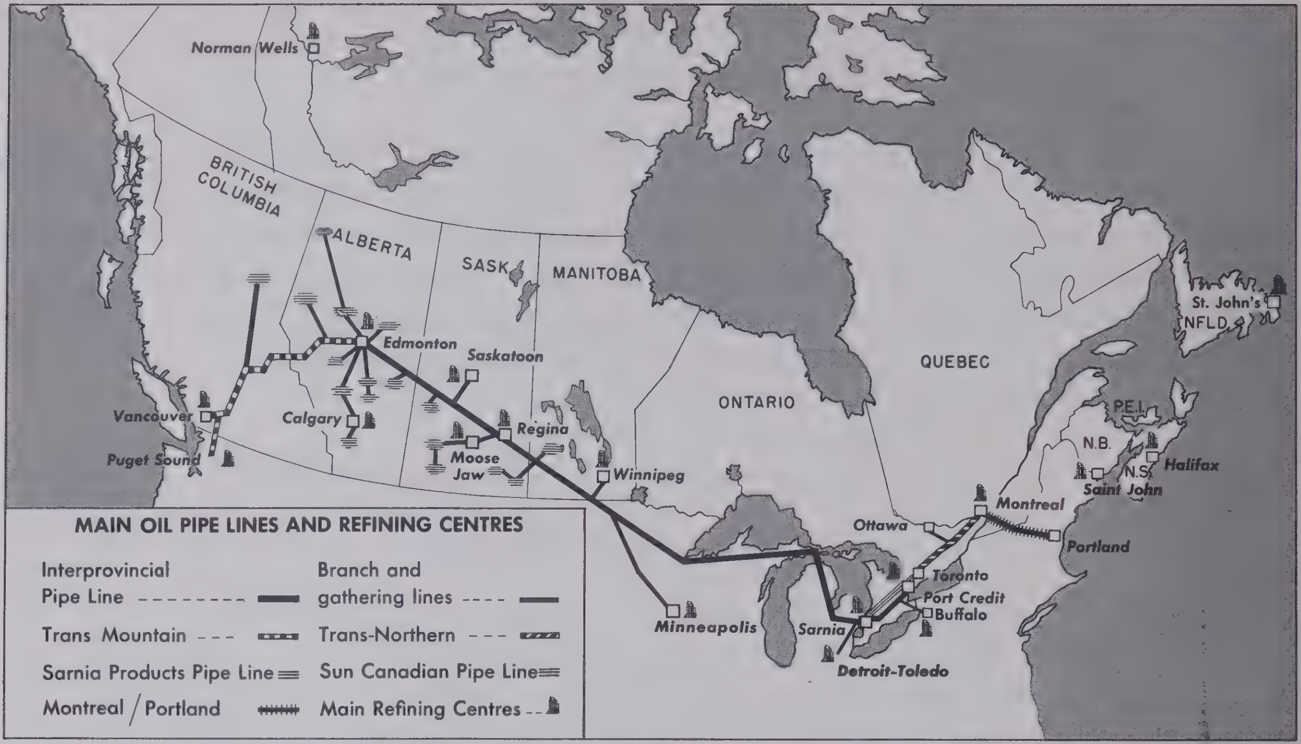
California (Greeley)	37°	3.12	U.S. Funds
Mid-Continent	36°	2.92	U.S. Funds
Texas (East)	39°	3.10	U.S. Funds
(West Central)	40°	3.01	U.S. Funds
Venezuelan (Guanipa)	30°	2.53 (2)	U.S. Funds
Arabian (Persian Gulf)	34°	1.80 (2)	U.S. Funds

(1) *April 1966*

(2) *f.o.b. Loading Port*

Petrochemicals

A comparatively new, but rapidly growing, phase of the oil industry is the manufacture from petroleum of chemical raw materials and intermediate products which form the basis for a wide variety of finished products such as synthetic fibers, rubbers, detergents, plastics, surface coatings, fertilizers, etc. The number of petrochemical production plants in Canada, excluding sulphur plants, totalled 67 at the end of 1965, representing an investment of about $850 million. Their production is displacing materials formerly imported. Export markets are being developed as well.



Canada's Oil Pipe Lines

Canada's oil supplies travel through a network of pipe lines that extends literally from coast to coast. Originally terminating at Superior, Wisconsin, the Interprovincial pipe line was extended to Sarnia, Ontario, and later to Port Credit, Ontario. Spur lines serve adjacent U.S. markets. The Trans Mountain pipe line snakes its way over the Rockies to Vancouver and the Puget Sound area in the U.S. Six pipe lines carry refined products to their markets. In the east, Quebec refineries receive their supplies via the Portland-Montreal pipe line and the Atlantic provinces' refineries are supplied by tankers.

Pipe Line mileage at year-end

Year	Mileage
1939	182
1946	418
1950	1,423
1952	2,500
1954	4,808
1956	6,208

Year	Mileage
1960	8,010
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1962	9,850
1963	10,100
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1965	11,320

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Texaco	Wizard Lake-Edmonton	170	39	86	73	78
Peace River	Red Earth-Sturgeon Lake-Bickerdike & Edmonton	405	11	25	47	41
Trans Prairie	Virden-Cromer, Weyburn-Midale and Boundary Lake-Fort St. John	452	32	70	77	84
Pembina	Drayton Valley-Edmonton	809	N.A.	113	121	115

**Trunk line figures are length of line only and do not include parallel lines (looping), etc.*

†Gathering system figures are total length of pipe.

Refinery Capacity

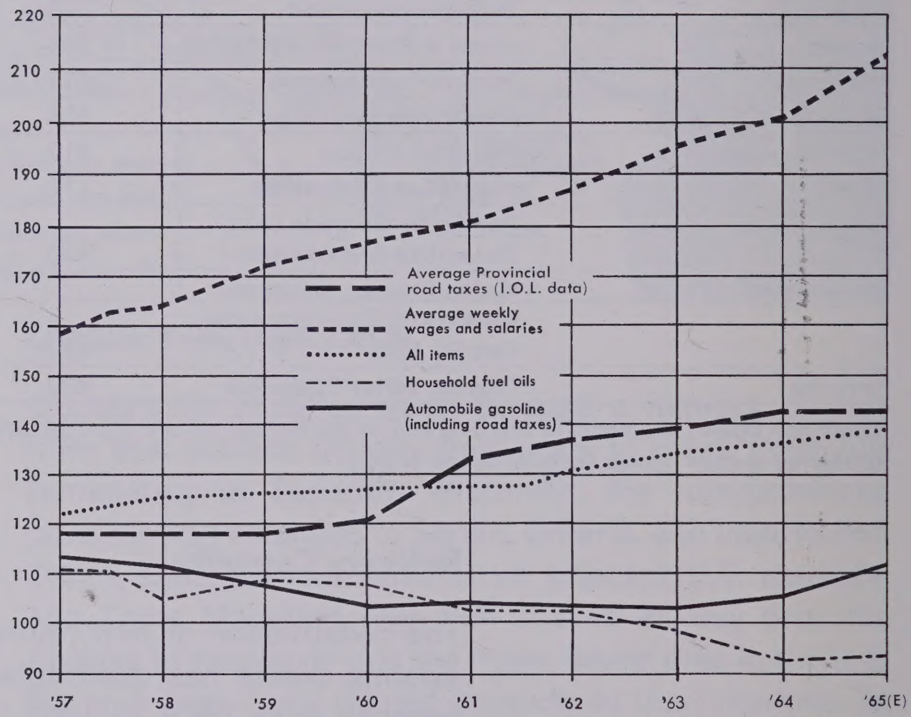
The construction of new refineries and the expansion of existing plants has quadrupled the nation's oil refining capacity since 1946. In 1965 Canada's 40 refineries processed some 972,000 barrels of oil per day.

Rated refinery capacity (Barrels per calendar day at year-end)

Year	B.C.	Prairies	Ontario	Quebec	Atlantic Provinces	Canada
1946	21,800	40,815	77,950	71,000	34,300	245,865
1956	71,900	177,400	151,900	241,000	42,300	684,500
1958	98,200	182,000	227,500	264,300	49,300	821,300
1960	103,400	198,500	247,200	291,500	94,300	934,900
1962	97,200	202,100	264,000	294,000	105,800	963,100
1963	99,000	201,500	308,000	305,000	106,300	1,019,800
1964	103,000	199,700	304,900	315,700	130,800	1,054,100
1965	101,000	205,200	316,900	348,200	137,000	1,108,400

Trends in Product Prices

In spite of the enormous investment required to develop Canada's oil industry, technical progress and intense competition have kept price increases to a minimum. Despite substantial increases in road taxes the average retail price of gasoline is lower than it was in 1957. In the same period the average price of all items has increased by some 13 per cent, and wages and salaries rose 34 per cent.



Source: Dominion Bureau of Statistics Base: 1949 = 100

Consumer Price Indexes*	1957	1959	1961	1962	1963	1964	1965(E)
Gasoline (including road tax)	112.2	107.6	104.2	103.9	102.5	106.8	111.5
Household Fuel Oil	113.5	108.6	103.8	101.8	97.9	93.0	93.0
All Items	121.9	126.5	129.2	130.7	133.0	136.8	138.7
Wage and Salary Trend*							
Dollars a week	67.93	73.47	78.11	80.59	83.41	86.68	91.19
Provincial Road Tax Trend†	118.5	118.5	133.7	137.3	139.0	142.5	142.5

†Imperial Oil data (Also see table, page 13)

**Dominion Bureau of Statistics*

Product Quality

While gasoline prices have remained low, product quality has been greatly improved. Today's regular grade gasoline has an octane rating equal to the premium grade of ten years ago.

All-Canada average research octane number

	1947	1955	1957	1959	1961	1963	1964	1965
Premium	84.7	94.0	96.8	98.6	99.0	99.2	99.2	99.4
Regular	79.6	87.6	90.5	92.3	93.0	93.5	93.8	94.3

Octane rating is the measure of a gasoline's resistance to knocking in the modern high-compression car engine. The above figures are from a Canada-wide average compiled by the Ethyl Corporation of Canada Limited.

Breakdown of motorist's gasoline dollar*

Largely due to road taxes, the price the motorist pays for gasoline at the service station is more than twice what the oil company receives for it.

(Based upon December 1965 average price of regular grade gasoline in principal Canadian cities)

Oil company's share (wholesale price)	44.3%
Federal government's share (sales tax)	4.3
Provinces' share (road tax)	33.8
Service station operator's share	17.6
	100.0%

**Imperial Oil data*

Provincial Road Taxes on Gasoline (cents per gallon)

	Nfld.	N.S.	N.B.	P.E.I.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1946	16*	10	10	10	8	8	7	8	7	7
1966 (April)	19	19	18	18	16	16	17	15	12	13

**Import duty*

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